

Pond Dewatering Pilot Test

The work is to consist of conducting a pond dewatering pilot test at Pond E to gather information necessary to allow for development of a ash dewatering design for Pond E.

Project Background

Pond E was originally designed in 1967 and has been used as a settling basin for ash and other Coal Combustion Byproduct (CCB) material. Based on a review of the original 1967 design plans for Pond E and topographic mapping developed in March 2015 by GAI Consultants, Inc., it is estimated that Pond E contains approximately 750,000 CY of ash. The depth of ash varies along the pond, but it is estimated that the maximum depth extends approximately 35 feet. Pond E also has free water ponded over the ash. The pool elevation of the water varies with precipitation and the water depth varies across the pond. At the time of development of the topographic mapping in March 2015, it was estimated that the volume of ponded water is approximately 52.5 million gallons and extends to a depth of approximately 17 feet.

As part of the clean closure construction activities planned for Pond E, ash is proposed to be mechanically dredged from the pond and transported to Pond D. To facilitate dredging of materials from Pond E, the free water will be removed from the pond and the ash will be dewatered to a point at which it can be tracked over with equipment and excavated and removed.

Task 1: Dewater Pond E

To facilitate the pilot dewatering testing, the free water will be removed from Pond E to expose the ash layer. The principal spillway riser in Pond E uses flash boards (i.e. "stop logs") to control the pool elevation. The Contractor shall dewater the free water from Pond E by removing these flash boards one at a time to allow the water to decant from the pond at a controlled rate. The discharge from the Pond E outfall pipe must be monitored regularly to ascertain that the water from the pond is not visually turbid. If the discharge from the outfall pipe becomes visually turbid, the Contractor shall reinstall the flash boards to stop the decant process. If additional water needs to be removed from Pond E to facilitate the pump test, the water shall be pumped to Pond D. Water with visual turbidity shall not be discharged via Outfall 005, located at Pond E. Once dewatering operations are complete, the flash boards shall be reinstalled into the Pond E riser to prevent water from being discharged offsite during the pilot test. It is known that water leaks into the Pond E outlet riser through joints between the flash boards and possibly around the sides of the flash boards. The Contractor shall pump water from the Pond E outlet or otherwise take measures necessary to stop the outlet structure from leaking to prevent water discharge from Pond E. If the water level in Pond E needs lowered at any time during the dewatering pilot test, the water shall be pumped to Pond D to minimize the potential for discharge from Pond E.

Task 2: Well Point Pilot Test

A pilot test will be completed by the Contractor to determine how the ash impounded in Pond E reacts to dewatering activities and to determine how dewatering affects properties of the impounded ash, including pore pressure, stability, and excavatability. The pilot testing should be conducted at the northwest portion of the pond near the outlet riser. A suggested location of the well point pilot test is shown on **Figure 1** (attached). This is the area of the pond where the ash is likely to contain finer material, and should yield more conservative results. The Contractor shall furnish all equipment and labor necessary to complete the following tasks:

- Install twenty-one (21) conventionally constructed (filtered with washed concrete sand) and equally spaced wellpoints. The wellpoints will be jetted in along a single 100-foot line.
- Install two wellpoints with wrapped filter fabric and no granular backfill.
- Install five piezometers perpendicular to the wellpoint line. The five piezometers should be installed perpendicular and downgradient of the primary wellpoint line.

- Install a tensiometer cluster between each of the piezometers (4 total tensiometer clusters). Each tensiometer cluster will include three instruments, one each at depths of 5, 10, and 15 feet below the ground surface.
- Obtain ten (10) grab samples of the ash to determine the grain-size distribution with hydrometer analysis.

The Contractor may submit an alternative to the above well point design to the Engineer for approval.

Free water from Pond E can be used for jetting the wellpoints and piezometers in place. Water pumped from the wellpoints shall be discharged into Pond E or pumped to Pond D and shall not be discharged from the site.

Results from the well point pilot testing will be used to develop dewatering design methods for Pond E. The Contractor shall complete well point pilot testing as necessary to provide the following information which will be considered in the dewatering design:

- Determine the in-situ Hydraulic Conductivity and Transmissivity
- Determine the Radius of Drawdown
- Determine the Storage Coefficient
- Determine the pumping rate to size a water treatment system
- Determine the constituents that make up the pore water of the ash. The testing shall determine the constituents of the water as well as the efficiency of the screen to reduce the amount of pollutants in the water.

Task 3: Deep Well Test

A well shall be installed along the top of the Pond E embankment, located near the location of the wellpoint pilot test. This well shall extend below the bottom of the ash and into a sand layer with the purpose being to determine the communication between the underlying aquifer in the sand layer and the ash impounded in Pond E. This well will provide data that will be used to determine the recharge potential of the ash from the underlying aquifer. The Contractor shall furnish all equipment and labor necessary for drilling, installation and development of the well, as long as installation of necessary instrumentation.

The Contractor shall complete the seep well test as necessary to provide the following information which will be considered in the dewatering design:

- Determine the in-situ Hydraulic Conductivity and Transmissivity
- Determine the Radius of Drawdown
- Determine the Storage Coefficient
- Determine the pumping rate to size a water treatment system
- Determine the communication between the underlying aquifer and the ash impounded in Pond E
- Determine the drawdown in the ash by a deep well system

Task 4: Rim Ditch Test

A rim ditch test will be completed by the Contractor by excavating a trench through the ash in Pond E. The rim ditch test will be used to determine the drainability of water from the ash into the ditch and to determine the stability of the ash along the excavation. The rim ditch test should be located near the southern portion of the pond and the rim ditches should be excavated approximately parallel to the Pond E embankment. A suggested location of the rim ditch test is shown on **Figure 1** (attached).

The Contractor shall furnish all equipment and labor necessary to complete the rim ditch test. The rim ditch test will be completed by using a track-mounted excavator and trenching two individual rim ditches. Each rim ditch shall be a minimum of 500 feet in length and should be extended to a depth adequate enough to gather the required information. Safety precautions must be exercised to consider worker safety. Trenching must follow OSHA requirements for excavations (slope and bench the sides of the excavation or use shoring) if workers will be entering the trench. As excavation of the rim ditch proceeds, samples of the ash should be collected and submitted to a laboratory to determine the grain-size distribution. A test pit will be excavated at the downgradient end of the rim ditch to further observe excavatability and ash drainability and to serve as a sump to collect water from the ash. Water draining from the ash and collected in the rim ditch and test pit shall be discharged into Pond E or pumped to Pond D and shall not be discharged from the site.

Results from the rim ditch testing will be used to develop dewatering design methods for Pond E. The Contractor shall complete rim ditch testing as necessary to provide the following information which will be considered in the dewatering design:

- Determine the potential flow rate from open ditch and sump methods.
- Observe the stability of the ash as water flows through.
- Observe the stability of the ash in an open excavation.
- Obtain grab samples of the ash to determine the grain-size distribution and hydraulic conductivity.
- Determine the constituents that make up the pore water of the ash.

Task 5: Report of Findings

Upon completion of the work as outlined above, the contractor shall prepare a report summarizing the findings of the Pond Dewatering Test and the information requested in this Scope of Work. The report shall have a narrative describing the methods used to complete the work as well as the results of the field testing and laboratory testing. Laboratory testing of ash and water samples shall be completed by a certified laboratory. All laboratory testing results shall be provided in the findings report. Contractor shall submit a draft report to the Engineer or Owner for review and shall prepare a final report based on Engineer or Owner comments.

Safety and Air Compliance Requirements

Safety is the sole responsibility of the Contractor. The Contractor shall meet all Dominion and OSHA safety requirements and shall prepare a health and safety plan prior to beginning the work. All workers are required to complete the Dominion site safety training prior to entering the site.

The Contractor shall comply with Dominion air compliance requirements as follows:

Contractor shall provide a list of all equipment planned to be onsite and a list of planned activities. The list of equipment shall include size, activity that it will be performing, whether or not it has a permit, and how long that equipment will be on site.

General Air compliance requirements:

Fuel Standards for non-road engines

What's a Non-Road Engine?

- Engine that is used in or on a piece of equipment that is self-propelled or serves a dual purpose by both propelling itself and performing another function (such as a garden tractor, off-road mobile cranes and bulldozers)

- Engine that is used in or on a piece of equipment that is intended to be propelled while performing its function (such as lawnmowers and string trimmers)
- By itself or in or on a piece of equipment it is portable or transportable, meaning designed to be and capable of being carried or moved from one location to another. Included but not limited to wheels, skids, carrying handles, dolly, trailer or platform

Fuel Standards for Non-Road Engines

- Fuel for non-road diesel engines must have a sulfur content less than or equal to 15 ppm (Ultra Low Sulfur fuel)
- The storage tanks (including dispensers) containing the Ultra Low Sulfur fuel must be properly labeled – let me know if you need to see any example of what those labels look like.

Vehicle Idling Restrictions Virginia Requirement:

- Licensed on-road motor vehicles restricted to no more than 3 minutes when parked in urban areas
- Exception for necessity to provide auxiliary power – i.e. a bucket truck's lift
- May not idle to provide heating or air conditioning

Fugitive Dust (9 VAC 5-50-90):

- During the operation of a stationary source or any other building, structure, facility, or installation, do not permit any materials or property to be handled, transported, repaired, or demolished without taking reasonable precautions to prevent fugitive emissions (dust) from becoming airborne.
- Where possible, use water or chemicals to control dust. Examples include the demolition of structures, construction operations, grading of roads or clearing of land.
- Apply asphalt, water, or suitable chemicals on dirt roads, materials stockpiles and other surfaces which may create airborne dust.
- Pave roadways as needed, and maintain them in a clean condition.
- Install hoods, fans, and fabric filters to enclose and vent the handling of any dusty material.
- Adequate containment methods should be employed during sandblasting or similar operations.
- Open equipment for conveying or transporting material likely to create objectionable dust shall be covered or treated in an equally effective manner at all times when in motion.
- Promptly remove spilled or tracked dirt or other materials from paved streets. This also includes the removal of dried sediments resulting from soil erosion.